

REMARKS

Claims 1-12, 24, 26-33, 44, 46-53, 64, 66, 68-70 and 72-80 are pending. The Office Action dated October 29, 2008 in this Application has been carefully considered. Claims 1, 24, 44, 64, 66, 68, 69, 70, and 80 have been amended in this Response to more particularly claim the invention. Claims 81 – 87 have been added in this response. Reconsideration and allowance are respectfully requested in light of the above amendments and following remarks.

Applicant wishes to thank the Examiner for the courtesy of the interview conducted on December 16, 2008. During the interview, the above-referenced amendments were discussed. Tentative agreement was not reached that such amendments patentably distinguish from the art currently of record. The Examiner suggested that a declaration which provided evidence that Carley discloses vapor deposition method that results in particles on the device within a housing may overcome the rejection. At least in response to Examiner's suggestion, Applicant now attaches Exhibit 1 (Declaration of Sean C. O'Brien), herein incorporated by reference and copied in full for all purposes. Further discussion of this interview and the contents of Exhibit 1 are provided in the paragraphs below.

Certain clarifying amendments have been made to the claims, which Applicant intends to be no more than tangentially related to any rejection of the claims. Claim 1 has been amended to read: "removing portions of the structural material to produce one or more apertures." This amendment has been made to clarify the operation of producing the one or more apertures from the structural material. Support for this amendment may be found at least on page 8, lines 14 – 18 of the Application. Applicant respectfully submits that this amendment bears no more than a tangential relationship to the rejection of the Claim. Accordingly, Applicant does not intend to surrender any equivalents encompassed by Claim 1 as a result of this amendment.

Claim 1 has also been amended to delete the phrase “during an application of the protective material to the housing.” This amendment is made to clarify the relationship between the operation of removing portions of structural material and depositing the protective material, as claimed in Claim 1. Applicant respectfully submits that this amendment bears no more than a tangential relationship to the rejection of the Claim. Accordingly, Applicant does not intend to surrender any equivalents encompassed by Claim 1 as a result of this amendment.

Claims 70, 72, 73, and 75 – 80 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Carley (U.S. 7,008,812). Rejected independent Claim 70 has been amended to more particularly claim at least one of the distinguishing features of the claimed invention, namely the following:

forming the shape and size of the at least one aperture, such that a removing material is able to pass through the at least one aperture but a protective material ***cannot flow through the at least one aperture and be deposited on the device or any substrate underlying the housing*** during an application of the protective material to the housing.

(Emphasis Added). Support for this amendment can be found among other places on page 8, lines 18 – 24 and page 9, lines 10 -16 of the Application.

The cited reference Carley does not teach, disclose or suggest forming the shape and size of the apertures such that protective material cannot flow through the aperture and cannot be deposited onto the device or any underlying substrate during application of the protective material to the housing. Specifically, a person of ordinary skill would have recognized that Carley teaches a method of depositing ***a metallic layer*** onto a housing that ***must use either sputtering or chemical vapor deposition*** (CVD). See Exhibit 1, paragraph 10 (Declaration of Sean C. O’Brien). Carley states that “seal layer 26 is the same metal as the seal layer 18 and MEMS microstructure 14.” See Carley col. 5, line 22. If seal layer 26 is a metal, it would have been deposited by using sputtering or CVD. See Exhibit 1, paragraph 10. In each of sputtering and CVD, metallic material used to

seal holes in a receiving surface would have entered the holes and would have been deposited on any underlying structure. See Exhibit 1, paragraphs 7 and 9.

In sputtering, a receiving surface would have been layered by placing the surface into a vacuum chamber and raining the layering material onto the receiving surface. See Exhibit 1, paragraphs 6 - 7. The layering material would have been a vaporized form of a target material, such as a metal, which would be created by bombarding the target material with ions to eject particles of target material. See Exhibit 1, paragraphs 6 - 7. This ejected target material would travel in a ballistic trajectory through the vacuum chamber and impinges onto the receiving surface to form the layer of material. See Exhibit 1, paragraphs 6 - 7.

Use of sputtering to seal any apertures in the receiving surface would have resulted in some target material passing through the aperture and onto any underlying surfaces. See Exhibit 1, paragraph 7. Material would deposit within any cavity within the receiving surface. See Exhibit 1, paragraph 7. Carley also indicates that one way of preventing sputtered material from falling into the holes and onto the underlying device would be to arrange the placement of the holes away from the underlying device. See Carley, col. 4, lines 63 - 65; Figure 7C (showing the etchant hole 20 positioned away from the microstructure 14). There would have been no reason or rationale when employing a sputtering method in manufacturing the Carley device to form the shape and size of the apertures so that sealing material does not flow into the apertures and onto underlying structure, because doing so would not prevent the sputtered material from passing through the holes and depositing on the underlying cavity.

In CVD, a reactant gas would have been released into a chamber having a receiving surface. See Exhibit 1, paragraphs 8 - 9. The pressure and temperature of the chamber would have depended on the reactant gas chosen. See Exhibit 1, paragraphs 8 - 9. Given this environment, the reactant

gas would have reacted with the receiving surface to form a thin film on the surface. See Exhibit 1, paragraphs 8 - 9. If there were any apertures in the receiving surface, the reactant gas would have passed through the apertures, enter any cavity in the receiving surface and deposit onto underlying structure. See Exhibit 1, paragraphs 8 - 9. The size and shape of the apertures would not have prevented the reactant gas from entering the cavity. See Exhibit 1, paragraphs 8 - 9. There would have been no reason or rationale when employing a CVD method in manufacturing the Carley device to form the shape and size of apertures so that sealing material did not flow into the apertures and onto underlying structure, because doing so would not prevent the reactant gas from passing through the holes and depositing on the underlying cavity and very likely adversely affecting the construction and operation of the encapsulated device..

In view of the foregoing, it is apparent that the cited reference does not teach the unique combination now recited in amended Claim 70. Applicant therefore submits that amended Claim 70 is clearly and precisely distinguishable over the cited reference in a patentable sense, and is therefore allowable over this reference and the remaining references of record. Accordingly, Applicant respectfully requests that the rejection of amended Claim 70 under 35 U.S.C. § 102(e) be withdrawn and that Claim 70 be allowed.

Claims 72, 73, and 75 - 79 depend from and further limit Claim 70. Hence, for at least the aforementioned reasons that Claim 70 should be deemed to be in condition for allowance, Claims 72, 73, and 75 - 79 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claims 72, 73, and 75 - 79 also be withdrawn.

Rejected independent Claim 80 has been amended to more particularly claim at least one of the distinguishing features of the claimed invention, namely the following:

determining a shape and size for an aperture such that a removing material, having a first viscosity, is able to pass through the aperture but ***a liquid protective material, having a second viscosity, cannot pass through the aperture during an application of the protective material to the housing.***

(Emphasis Added). Support for this amendment can be found among other places on page 8, lines 18 – 24 and page 9, lines 10 -16 of the Application.

The cited reference Carley does not teach, disclose or suggest determining the shape and size for an aperture such that a liquid protective material, having a given second viscosity, cannot pass through the aperture during an application of the protective material to the housing. Specifically, a person of ordinary skill would have recognized that Carley teaches a method of depositing ***a metallic layer*** onto a housing that ***must use either sputtering or chemical vapor deposition (CVD)***. See Exhibit 1 paragraph 10.

In the sputtering method of Carley, metal, as a target material, would have been vaporized and rained upon a receiving surface. There would have been no reason or rationale when employing a sputtering method in manufacturing the Carley device to determine the shape and size of an apertures so that sealing material did not pass into the aperture and onto underlying structure, because doing so would not prevent the sputtered material from passing through the holes and depositing on the underlying cavity.

In CVD, a specific environment of reactant gas at a pre-defined pressure and temperature would have filled a chamber so that the reactant gas may be deposited onto the housing to form a thin film. See Exhibit 1, paragraphs 8 - 9. Reactant gas also would have entered any apertures and deposit on any underlying surfaces beneath the receiving surface. See Exhibit 1, paragraphs 8 - 9. In CVD, a thin film would have been deposited by a gas reaction at the receiving surface. See Exhibit 1, paragraphs 8 - 9. There would have been no reason or rationale when employing a CVD

method in manufacturing the Carley device to form the shape and size of apertures so that the sealing material does not flow into the apertures and onto underlying structure, because doing so would not prevent the reactant gas from passing through the holes and depositing onto the underlying cavity. Furthermore, employing the CVD method would have likely adversely affected the construction and operation of the encapsulated device of Carley. See Exhibit 1, paragraph 9.

Claim 80 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of Claim 80 also be withdrawn.

Claims 1, 2-5, 8-12, 24-28, 31-33, 44-48, 51-53, 64, 66, 68 and 69 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Carley in combination with Marrs (U.S. 5,485,037) and Plummer (U.S. 4,480,975). In light of the amendments submitted herewith, Applicant respectfully submits that the rejections have been overcome. Accordingly, Applicant respectfully requests that the rejections be withdrawn.

Rejected independent Claim 1 as now amended more particularly recites one of the distinguishing characteristics of the present invention, namely the following:

depositing the protective material adjacent the housing of structural material overlaying at least one of the one or more apertures in an amount sufficient to substantially close the overlaid one or more apertures *without the protective material being deposited on the device or any substrate underlying the housing*

(Emphasis added.) Support for this amendment can be found among other places on page 8, lines 18 – 24 and page 9, lines 10 -16 of the Application.

However, Carley, Marrs and Plummer do not suggest, teach, or disclose, alone or in combination, depositing protective material adjacent to the housing to close the aperture without the protective material being deposited on the device or underlying substrate. As indicated above in remarks for Claim 70, a person of ordinary skill would have recognized that Carley teaches a

method of depositing *a metallic layer* onto a housing that *must use either sputtering or chemical vapor deposition* (CVD). In each of the methods of sputtering and CVD, metallic material used to seal holes in a receiving surface would enter the holes and be deposited onto any underlying structure. Neither Marrs nor Plumber was relied upon for teaching this limitation.

In view of the foregoing, it is apparent that the cited references do not teach the unique combination now recited in amended Claim 1. Applicant therefore submits that amended Claim 1 is clearly and precisely distinguishable over the cited references in a patentable sense, and is therefore allowable over these references and the remaining references of record. Accordingly, Applicant respectfully requests that the rejection of amended Claim 1 under 35 U.S.C. § 103(a) be withdrawn and that Claim 1 be allowed.

Claims 2-5, and 8-12 depend from and further limit Claim 1. Hence, for at least the aforementioned reasons that Claim 1 should be deemed to be in condition for allowance, Claims 2-5, and 8-12 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claim 2-5 and 8-12 also be withdrawn.

Applicant contends that the rejections of amended Claims 24, 44, 66, 68, and 69 are overcome for at least some of the reasons that the rejection of Claim 1 as amended is overcome. These reasons include Carley not disclosing, teaching, or suggesting:

- Sealing the apertures with protective material to substantially close each aperture *“without the protective material being deposited on the device or any substrate underlying the housing”* (Emphasis added) for Claims 24, 44, and 69.
- Depositing the protective material to substantially close the aperture *“without the protective material being deposited on the device or any substrate underlying the housing”* (Emphasis added) for Claim 68.

- Placing the protective material adjacent to the housing to substantially close the aperture *“without the protective material being deposited on the device or any substrate underlying the housing”* (Emphasis added) for Claim 66.

The references Marrs and Plumber were not relied upon for teaching these limitations. Applicant therefore respectfully submits that amended Claims 24, 44, 66, 68, and 69 are clearly and precisely distinguishable over the cited references in any combination.

Rejected independent Claim 64, as now amended, more particularly recites one of the distinguishing characteristics of the present invention, namely the following:

providing a gas atmosphere at a first pressure, wherein the first pressure is greater than or equal to 1 Pascal (Pa);
providing a first temperature of less than 600° Celsius (C);
...
depositing the protective material adjacent to the housing in an amount sufficient to substantially close the at least one aperture without entering the housing sufficiently to interfere with operation of the device, *wherein the first pressure and the first temperature are adjustable during the application of the protective material.*

(Emphasis Added). Support for this amendment can be found among other places on page 10, lines 16 – 25 through page 11, lines 1 -12 of the Application.

However, Carley, Marrs and Plumber do not suggest, teach, or disclose, alone or in combination depositing the protective material in an environment having a first temperature below 600° Celsius (C) and first pressure greater than or equal to 1 Pascal, wherein the first temperature and first pressure are adjustable during application of the protective material. Specifically, Carley teaches a method of depositing *a metallic layer* onto a housing that *must use either sputtering or chemical vapor deposition* (CVD). See Exhibit 1, paragraph 10. In the sputter deposition method, a person of ordinary skill would have known that the method must be practiced in a vacuum,

because otherwise the sputtered material would collide with gas molecules in the ambient atmosphere and not reach the receiving surface. See Exhibit 1, paragraph 9. In the CVD method, a person of ordinary skill would have known that the method must be practiced at a specific pre-defined temperature and pressure to facilitate the gas reaction with the material of the receiving surface. See Exhibit 1, paragraph 9. The pressure or temperature cannot be adjusted during application of the thin film. See Exhibit 1, paragraph 9. Accordingly, the CVD method would have required a controlled environment where the temperature and pressure are not adjustable. See Exhibit 1, paragraph 9. Furthermore, employing the CVD method would have likely adversely affected the construction and operation of the encapsulated device of Carley. See Exhibit 1, paragraph 9.

The references Marrs and Plumber were not relied upon for teaching these limitations. Applicant therefore respectfully submits that amended Claim 64 is clearly and precisely distinguishable over the cited references in any combination.

Claims 26-28 and 31-33 depend from and further limit Claim 24. Hence, for at least the aforementioned reasons that Claim 1 should be deemed to be in condition for allowance, Claim 24 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claim 26-28 and 31-33 also be withdrawn.

Claims 45-48 and 51-53 depend from and further limit Claim 44. Hence, for at least the aforementioned reasons that Claim 44 should be deemed to be in condition for allowance, Claims 45-48 and 51-53 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claim 45-48 and 51-53 also be withdrawn.

Claims 6, 7, 29, 30, 49 and 50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Carley, Marrs, and Plummer and further in combination with U.S. Publication No.

2004/0046835 to Yang et al. ("Yang"). In light of the amendments submitted herewith, Applicant respectfully submits that the rejections have been overcome. Accordingly, Applicant respectfully requests that the rejections be withdrawn.

Applicant contends the rejections of amended Claims 6, 7, 29, 30, 49 and 50 are overcome by reason of their dependency on Claim 1 (for dependent Claims 6 and 7), Claim 24 (for dependent Claims 29 and 30), and Claim 44 (for dependent Claim 50). Hence, for at least the aforementioned reasons that Claims 1, 24, and 44 should be deemed to be in condition for allowance, Claims 6, 7, 29, 30, 49 and 50 should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claim 6, 7, 29, 30, 49 and 50 also be withdrawn.

An Examiner interview was held December 16, 2008. During the interview and the Examiner's subsequent summary, the Examiner indicated that the Patent Publication No. 2003/0183916 to Heck et al. ("Heck") discloses a "use of a printing method to apply its sealing/protective material that includes use of a liquid type material" that would anticipate the Claims of the Application. Though the Examiner has not made a formal rejection of the Claims over Heck, Applicant contends that Heck is not enabling to anticipate, expressly or inherently, any of the Claims now presented in the Application.

To anticipate a claimed invention, the prior art must enable a person of ordinary skill in the art to make the invention without undue experimentation. It will be the Examiner's burden to make a prima facie case of anticipation. However, the reference Heck is not enabling, because it gives no details to a person of ordinary skill in the art as to how "a patch may simply be deposited or printed directly onto the holes 32." Furthermore, Heck indicates that "[t]he holes may be positioned far enough from the device 18 that the device 18 is not affected by that deposition process," which would further indicate to a person of ordinary skill that the deposition methods contemplated in

Heck would result in patch material falling through the apertures to impinge an underlying surface. For these reasons, Applicant submits that Heck would not anticipate the claimed invention as presently presented.

Applicant has added new Claims 81 – 83. No new matter has been added, and support for these new claims may be found at least on page 11, lines 13 – 21 of the Application.

Applicant has added new Claims 84 – 86. No new matter has been added, and support for these new claims may be found at least on page 10, lines 16 – 25 of the Application.

Applicant has also added new Claim 87. No new matter has been added, and support for this new claim may be found at least on page 9, line 10 - 25 and page 10, lines 1 - 12 of the Application. Since each of Claims 81 – 87 depend from and limit parent Claim 1, Applicant submits that it should be allowable for at least some of the same reasons that now amended Claim 1 is allowable.

Applicant has now made an earnest attempt to place this Application in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests full allowance of Claims 1-12, 24, 26-33, 44, 46-53, 64, 66, 68-70, and 72-87.

Applicant hereby requests continued examination together with an extension of time for making this reply and hereby authorizes the Director to charge the required fees to Deposit Account No. 50-0605 of CARR LLP. Applicant does not believe that any other fees are due; however, in the event that any other fees are due, the Director is hereby authorized to charge any required fees due (other than issue fees), and to credit any overpayment made, in connection with the filing of this paper to Deposit Account No. 50-0605 of CARR LLP.

Respectful request is made for reconsideration of the Application, as amended, and for an issuance of a Notice of Allowance. Should the Examiner deem that any further amendment is desirable to place this Application in condition for allowance, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,

CARR LLP

Dated: March 30, 2009
CARR LLP
670 Founders Square
900 Jackson Street
Dallas, Texas 75202
Telephone: (214) 760-3030
Fax: (214) 760-3003

/Gregory W. Carr/
Gregory W. Carr
Reg. No. 31,093